WHAT IS CLAIMED IS:

1. A laser oscillator comprising:

a laser medium in which a phosphorescent material is dispersed at a concentration of not less than 10 wt% into a host material; and

an optical resonator for amplifying luminescence from the excimer state of the phosphorescent material.

2. A laser oscillator comprising:

an film containing a laser medium formed on a substrate; and

an optical resonator,

wherein the laser medium includes a host material and a phosphorescent material dispersed into the host material at a concentration of not less than 10 wt%, and

wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light across the film containing the laser medium is amplified by the optical resonator.

3. A laser oscillator comprising:

a film containing a laser medium formed on a substrate; and

an optical resonator,

wherein the laser medium includes a host material and a phosphorescent material dispersed into the host material

at a concentration of not less than 10 wt%, and

wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light contained within a surface composed of the film containing the laser medium is amplified by the optical resonator.

4. The laser oscillator according to claim 2, wherein the laser oscillator comprises an excitation light source, and the phosphorescent material is excited to the excimer state by excitation light emitted form the excitation light source.

5. The laser oscillator according to claim 3, wherein the laser oscillator comprises an excitation light source, and the phosphorescent material is excited to the excimer state by excitation light emitted form the excitation light source.

6. A laser oscillator comprising:

a light emitting element formed on a substrate; and

an optical resonator,

wherein the light emitting element includes a luminescent layer, an anode and a cathode, the luminescent layer is interposed between the anode and the cathode,

wherein the luminescent layer includes a host material and a phosphorescent material dispersed into the host

material at a concentration of not less than 10 wt%,

wherein the anode and the cathode include a light transmitting property, and

wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light across the luminescent layer is amplified by the optical resonator.

7. A laser oscillator comprising:

a light emitting element formed on a substrate; and

an optical resonator,

wherein the light emitting element includes a luminescent layer, an anode, and a cathode, the luminescent layer is interposed between the anode and the cathode,

wherein the luminescent layer includes a host material and a phosphorescent material dispersed into the host material at a concentration of not less than 10 wt%, and

wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light contained within a surface composed of the luminescent layer is amplified by the optical resonator.

8. A laser oscillator comprising:

a light emitting element formed on a substrate; and

a plurality of reflective materials,

wherein the light emitting element includes a luminescent layer, an anode and a cathode, the luminescent

layer is interposed between the anode and the cathode,

wherein the luminescent layer includes a host material and a phosphorescent material dispersed into the post material at a concentration of not less than 10 wt%,

wherein the anode includes a light transmitting property,

wherein the luminescent layer is interposed between the cathode and the plurality of reflective materials, and

wherein in luminescence from the excimer state of the phosphorescent material, unidirectional light across the luminescent layer is amplified by the cathode and the plurality of reflective materials.

9. The laser oscillator according to claim 6, wherein a hole transporting layer contacting with the luminescent layer is formed between the anode and the luminescent layer, the hole transporting layer has an ionization potential lower than that of the luminescent layer or the host material, or the hole transporting layer has an ionization potential higher than that of the luminescent layer or the host material with an energy gap of not more than 0.4 eV.

10. The laser oscillator according to claim 7, wherein a hole transporting layer contacting with the luminescent layer is formed between the anode and the luminescent layer, the hole transporting layer has an ionization potential

lower than that of the luminescent layer or the host material, or the hole transporting layer has an ionization potential higher than that of the luminescent layer or the host material with an energy gap of not more than 0.4 eV.

11. The laser oscillator according to claim 8, wherein a hole transporting layer contacting with the luminescent layer is formed between the anode and the luminescent layer, the hole transporting layer has an ionization potential lower than that of the luminescent layer or the host material, or the hole transporting layer has an ionization potential higher than that of the luminescent layer or the host material with an energy gap of not more than 0.4 eV.

12. The laser oscillator according to claim 1, wherein the phosphorescent material generates luminescence having two or more peaks in a wavelength region of not smaller than 500 nm and not larger than 700 nm, and any one of the two or more peaks is excimer emission.

13. The laser oscillator according to claim 2, wherein the phosphorescent material generates luminescence having two or more peaks in a wavelength region of not smaller than 500 nm and not larger than 700 nm, and any one of the two or more peaks is excimer emission.

14. The laser oscillator according to claim 3, wherein the phosphorescent material generates luminescence having two or more peaks in a wavelength region of not smaller than 500 nm and not larger than 700 nm, and any one of the two or more peaks is excimer emission.

15. The laser oscillator according to claim 6, wherein the phosphorescent material generates luminescence having two or more peaks in a wavelength region of not smaller than 500 nm and not larger than 700 nm, and any one of the two or more peaks is excimer emission.

16. The laser oscillator according to claim 7, wherein the phosphorescent material generates luminescence having two or more peaks in a wavelength region of not smaller than 500 nm and not larger than 700 nm, and any one of the two or more peaks is excimer emission.

17. The laser oscillator according to claim 8, wherein the phosphorescent material generates luminescence having two or more peaks in a wavelength region of not smaller than 500 nm and not larger than 700 nm, and any one of the two or more peaks is excimer emission.